



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,254	10/18/2001	Toshihiko Suenaga	Q66783	5976

7590 01/27/2005
SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, NW
Washington, DC 20037-3213

EXAMINER

HODGE, ROBERT W

ART UNIT PAPER NUMBER

1746

DATE MAILED: 01/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/981,254

Applicant(s)

SUENAGA ET AL.

Examiner

Robert Hodge

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. In response to applicants' remarks the examiner withdraws the objections to claims 7-10 only but maintains the original objection to claims 3-6 since not all of the informalities have been corrected.
2. In response to the applicants' amended claims the examiner withdraws the previous rejections. However, upon further consideration, a new ground(s) of rejection is made in view of Wakamatsu U.S. Patent No. 6,231,053 hereinafter Wakamatsu.
3. Applicants are put on notice that the reply filed on 12/27/04 is not fully responsive to the prior Office Action because of the following omission(s) or matter(s): because words/phrases were deleted without being crossed through and phrases were added without being underlined. The examiner is not invoking 37 CFR 1.111, but is merely informing the applicants that a proper amendment should have been filed and that it is an undue burden for the examiner to compare old claims to new claims to find what is actually amended and what has been omitted. The burden is put on the applicants to review the original claims and the amended claims to determine all of the discrepancies.

Claim Objections

4. Claim 14 is objected to because of the following informalities: the phrase "one of claims 11" is improper. Since no range is recited and only one claim is listed, claim 14 can only depend from one claim, that being claim 11. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The phrase "wherein all the elements of the membrane electrode assembly are close-fitted into an inside of the seal" is not disclosed in the original specification nor do the drawings show this feature. The examiner notes that the new limitation is so broad and can be read in many different ways. One way that invokes new matter is that the seal totally encompasses all of the elements on all sides such as with shrink-wrap. Another possibility is a rubber seal encasement, housing all of the elements. But the claim language as recited is not limited to the two above examples and can also read on many other scenarios.

7. If the aforementioned new matter limitations were removed from the claims then the previous rejections of the first office action would then be reapplied to the claims.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 1746

9. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. In claims 1-5 the phrase "close-fitted into an inside of the seal" is used to describe the orientation of the seal and how it is in contact with the various elements of the membrane electrode assembly (MEA). It is unclear how the applicants wish to orient the seal with the claim language as recited. As recited the elements could be located completely inside the seal and have no means for connecting the electrodes to an outside environment, which would enable one to apply fuel/oxidant to the cell and then also recover the electrical energy produced from the electrochemical reaction. And it would also be very difficult for one to stack the MEAs into a fuel cell stack and at the same time connect them to one another. Therefore because of the dependency of claims 6-14 on claims 1-5 the same deficiency exists.

11. In claims 2-4 and 13-14 the word "circumference" is used referring to an electrode. It is unclear what the applicants wish to convey with this language, especially when the shape of the seal is a frame. A circumference by definition is a boundary line of a circle. So it is unclear how an electrode, which would have a rectangular shape, because of the use of a frame-shaped seal, can have a circumference. And even if the electrode were circular (which would be another new matter issue if added to the claims) it still would be unclear what the applicants are trying to claim. It is also vague as to where specifically different elements are to be oriented to one another as recited

Art Unit: 1746

in the claims. Therefore because of the dependency of claims 6-7 and 9-12 on claims 2-4 the same deficiency exists.

12. The term "larger area" in claims 13-14 is a relative term, which renders the claim indefinite. The term "larger area" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. First and foremost it is not defined as to what type of area is to be larger. Secondly there is no reference given as to what a first or second electrode are. And finally how one should have a larger area than the other.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

14. Claims 1, 8-9 and 11-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Wakamatsu U.S. Patent No. 6,231,053 hereinafter Wakamatsu.

15. Wakamatsu teaches a MEA or fuel cell with a frame shaped gasket (column 3, lines 45-46), which has an additional sealing bead coated thereon (column 3, lines 62-63) having a trapezoidal cross-section (column 4, line 67 and column 5, line 1), formed from numerous materials (column 3, lines 50 et seq. and column 4 lines 5-6) that is

Art Unit: 1746

bonded (column 3, line 67) and integrally formed (column 4, line 2). Wakamatsu also teaches that bipolar plates and a membrane come into close contact with the sealing section (column 5, lines 4, and 34-36) and that the membrane is clamped by the gasket (which would hold it in place). Wakamatsu further teaches projections from the gasket body (column 3, line 54) and that the sealing section has an upper sealing section, a lower sealing section and an inner sealing section (column 3, lines 64-65). Because of the unclearness of claims 13-14 in the above 112 rejection as to what area is larger than the other and since Wakamatsu discloses a varying thickness (i.e. cross-sectional area would be varied) of the gasket, which would vary how the electrodes are stacked on top of each other, which would in turn vary the stacked area that the electrodes occupy in the fuel cell stack (column 5, lines 25 et seq.), it reads on the claim language as so recited.

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 2-7 and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakamatsu in view of Kaneko et al. Japanese Published Application No. 09-147891 (hereinafter referred to as Kaneko et al.).

Art Unit: 1746

18. Wakamatsu teaches everything in the above 102 rejection. As well as the gasket frame can be composed of metal and other rigid materials and that a seal is applied onto it (column 3, lines 45 et seq.), therefore because of this disclosure the examiner has reason to believe that such a combination implies the presence of a reinforcing member in the MEA.

19. Wakamatsu does not teach the use of hot pressing or an adhesive.

20. Kaneko et al. teaches "A cell 10 can be prepared by adhering materials for an anode 12 and a cathode 13 to an ion exchanging membrane 11 by hot press." (page 2 paragraph 3).

21. At the time of the invention it would have been obvious to include in Wakamatsu the use of an adhesive and hot pressing as taught by Kaneko et al. in order to use a conventionally well known bonding method in order to provide an air tight seal, to prevent gases from leaking out of the stack thus causing a potential explosion hazard due to the presence of Hydrogen and Oxygen as well as preventing Oxygen from entering the anode side, wherein the Hydrogen would then react therewith and no mass transport would occur across the membrane thereby preventing the desired electrochemical reaction.

Conclusion

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 1746

- a. U.S. Patent No. 6,805,986 to Kuroki, teaches a gasket for a fuel battery, provided on both surfaces and integrally assembled together with a seal
- b. U.S. Patent No. 6,720,103 to Nagai, teaches gaskets that are integrally formed and are in tight contact with the inner surfaces of the separators

23. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Hodge whose telephone number is (571) 272-2097. The examiner can normally be reached on 8:00am - 4:30pm.

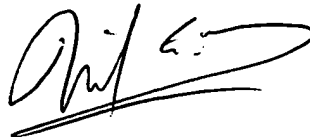
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1746

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RWH 1-24-05

MICHAEL BARR
SUPERVISORY PATENT EXAMINER

A handwritten signature in black ink, appearing to read 'Michael Barr', with a long horizontal stroke extending to the right.